RMA to ONA: The Saga of an Effects-based Operation

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Abstract

RMA to ONA: The Saga of an Effects-based Operation by Major Charles M. Kyle, US Army National Guard, 54 pages.

In the aftermath of the air campaign that began Operation Desert Storm, the US Air Force sought to measure US success in the military-technical and organizational innovation that occurred during the Gulf War and its impact on the future evolution of military art. From the perspective of the Air Force, the success of the war was based on planning and execution by the US air and naval strike forces during the initial aero-space operation, which set the stage for follow-on air-ground operations. These operations culminated in the defeat of Iraqi forces in theater and the liberation of Kuwait with few allied casualties. This success attracted considerable attention within the US Air Force and led to the reorganization of US Airpower for the Post-Cold War environment, which was characterized by local conflicts and Operations Other Than War. This success led the US Air Force submit this concept as the "centerpiece" for its input to the Quadrennial Defense Review of 2001. Air power theorists promoted this emerging concept as Effects-Based Operations (EBO). EBO emphasized that the goal of any conflict was to cause the adversary to act in accordance with US national interests, and that this could be achieved by the application of superior technology, against selected targets, to cause an effect. Though this was not a new concept, EBO was a new means to apply force in military operations.

Over the past decade there has been confusion on what is EBO, its capabilities and necessity. So where does all the confusion come from? Is contention by the service components regarding EBO just petty semantics or obstructionist in-fighting over a "rice bowl"? The divisive inter-service politics of EBO is utilized to illuminate certain issues but will not be researched and discussed in great detail for this monograph. It is unlikely that the Army will incorporate the term "EBO", but apparently, effects-based approaches have been, and will continue to be, intertwined within doctrine and tactics for the foreseeable future.

Army reticence to adopt even the word "EBO" or embrace it's principles begs the following question: "So what if we don't understand the theory, origins or the actual process, if the Army is implementing portions of EBO effectively, is that not success?" More than tacit incorporation of EBO may be needed, however, given the merits of EBO as a conceptual framework. At the Combined Arms Doctrine Directorate (CADD), Fort Leavenworth, Kansas, there is a push to rethink the way the Army makes decisions, postulating that a greater understanding of the environment and a complete understanding of the actual "problem" is necessary. This ability to gain a systemic understanding of the environment and developing a theory of action to inform a planning process is encapsulated in the "Art of Design," in which concepts of iterative learning and complex problems are introduced. Although the actual label of EBO may not be incorporated, the concepts and terminology may complement this emergent doctrine.

There is confusion and opposition to incorporating an effects based approach into Joint and Army planning doctrine that may be a result of resistance to ideas and concepts associated with, but not part of EBO. For example the Revolution in Military Affairs and the Air Force's interest in understanding the enemy as a system, vulnerable to the employment of precision weapons and discriminate air attack alone are highly controversial and often incorrectly, and unfairly associated with EBO. It is the merits of EBO, not related arguments postulated by EBO proponents that are considered in this monograph.

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Introduction

The Emergence of the Revolution in Military Affairs (RMA)[1]

The United States' combat effectiveness in the 1991 Gulf War was the result of the modernization and development of US conventional warfighting capabilities during the 1980s. Astounding combat effectiveness was accomplished through precision strikes against a staggering number of targets. Within 24 hours, the Coalition, primarily US Air Force, flew 1300 offensive sorties against 152 target sets.[2] These sorties accounted for more targets hit than the entire US Eighth Air Force during World War II between 1942-43.[3] The combined impact of these innovations amounted to a redefinition of the meaning of fires, strikes, maneuver, and effects that overthrew the preceding method of calculating the combat power of contesting militaries and the traditional correlation of forces. For some time, Soviet military analysts had discussed the possibility of a radical shift in military capabilities, and US efforts in the Gulf seemed to confirm this shift. In fact the Soviet General Staff had theorized and even named this future capability as a "revolution in military affair," in the 1970s and 1980s.[4] After the first few days of conflict, the worldwide perception was that the US military could strike anywhere and at anytime with

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[1] Andrew Marshall – "A Revolution in Military Affairs is a major change in the nature of warfare brought about by the innovative application of new technologies which, combined with dramatic changes in military doctrine and operational and organizational concepts, fundamentally alters the character and conduct of military operations." As quoted by Timothy D. Andrews, *Revolution and Evolution - Understanding Dynamism in Military Affairs*, Thesis, National War College, National Defense University (Washington: National War College, 1998), 2.

[2] David A. Deptula, "Firing for Effects, The important measure is not the target but rather the effect on the enemy's capabilities and actions," *Air Force Magazine* (Air Force Association) 84, no. 4 (April 2001), 46-53.

[3] Ibid., 48.

[4] Stephen Metz and James Kievit, *Strategy and the Revolution in Military Affairs: From Theory to Policy* (Carlisle Barracks, PA: Strategic Studies Institute, 1995), v.

precision lethality and minimal collateral damage.[5] This strike capability was the result of new guidance technologies that made it possible for munitions to be delivered with remarkable precision. As a compliment to this lethal strike capacity, the US also had the ability to virtually paralyze an adversary's electronically based command, control and communications systems. This capability was the result of the United States' ability to apply a military problem solving theory to a technical problem. Soviet observers saw this success as the emergence of a RMA.

During the 1970s and 1980s, a series of papers by Marshal N.V. Ogarkov, Chief of the Soviet General Staff, suggested the emergence of a revolution in military affairs as a result of new technologies.[6] Soviet theorists hypothesized that evolving technologies, combined with needed change in military doctrine, were producing a new form of conventional warfare. As a result of Ogarkov's papers and the works of other theorists, the concept of weapons based on new physical principles and advanced high-precision conventional weapons emerged.[7] This Soviet concept of using advanced, high-precision, conventional weapons was perfectly executed by the Americans in the deserts of Iraq and Kuwait in early 1991.[8]

In the aftermath of the air campaign that began Operation Desert Storm, the US Air Force sought to measure US success in the military-technical and organizational innovation that occurred during the Gulf War and its impact on the future evolution of military art. From the perspective of the Air Force, the success of the war was based on planning and execution by the US air and naval strike forces during the initial aero-space operation, which set the stage for follow-on air-ground operations. These operations culminated in the defeat of Iraqi forces in

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[5] Metz and Kievit, *Strategy and the Revolution in Military Affairs: From Theory to Policy*, 1.

[6] Ibid., 2.

[7] Jacob W. Kipp, "Confronting the RMA in Russia," *Military Review*, June-July 1997: 9.

[8] Gilberto Villahermosa, *DESERT STORM: The Soviet View*, http://leav-www.army.mil/fmso/documents/rs-storm.htm (accessed November 21, 2008).

theater and the liberation of Kuwait with few allied casualties. This success attracted considerable attention within the US Air Force and led to the reorganization of US Airpower for the Post-Cold War environment, which was characterized by local conflicts and Operations Other Than War. This success led the US Air Force submit this concept as the "centerpiece" for its input to the Quadrennial Defense Review of 2001.[9] Air power theorists promoted this emerging concept as Effects-Based Operations (EBO). EBO emphasized that the goal of any conflict was to cause the adversary to act in accordance with US national interests, and that this could be achieved by the application of superior technology, against selected targets, to cause an *effect.*

Though this was not a new concept, EBO was a new means to apply force in military operations. Historically, the US military participated in classical force-on-force battles. These were typically battles fought by adversaries who attempted to destroy each other on the battlefield. The execution of these operations was in accordance with the strategy of annihilation or exhaustion, both of which resulted in costly, protracted battles.[10] This destruction-based model slowly changed as the brutality of war intensified in the 20th century.

With the end of the Cold War, security policies and defense structures for the Western World began to evolve. During the previous five decades, these security policies had remained essentially unchanged. Conventional—nuclear technology and delivery systems had a revolution in the 1950 with nuclear weapons, 1960s with ballistic delivery systems, and in 1970s with C4ISR to gain increased accuracy with reduced yields causing similar effects. In order to understand the full extent of change in defense structures and weapons systems, the entire Cold War period of 50 years must be analyzed. Most national security problems, during the Cold War,

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[9] Kevin B. Glenn, "The Challenge of Assessing Effects-based Operations in Air Warfare," *Air & Space Power Chronicles*, April 2002.

[10] Kevin D. Admiral, *Effects-Based Operations: Enhancing Operational Art & Design in the 21st Century*, Master's Thesis (Norfolk: Joint Forces Staff College, 2005).

at that time were solved, not through technology, but through the application of the diplomatic element of national power. Over time a pattern evolved where military technology was adapted for civilian use, but rarely, if ever, was civilian technology used for military applications. This improvement in military adaptation of civilian technology was one of the greatest benefits of the Cold War.[11]

The decisive victory of the United States over Iraq in 1991, together with the collapse of the Soviet Union, resulted in an evolved and downsized defense infrastructure in the 1990s. Out of the "fog of war", produced by shrinking defense budgets, new technologies, and changing missions, emerged the Soviet concept of RMA. This RMA was centered on the integration of remote sensing systems with extremely lethal, precision-strike, weapons systems and high-tech command, control, and communications. This concept followed the lessons learned in the interwar period and post-World War II, where the most important and successful new ideas were created by a combination of technology, organization, tactics, and doctrine.

While the Air Force was considering the 1991 success in Iraq as primarily technical, Andrew Marshall's Office of Net Assessment (ONA) was contemplating the RMA in terms of "transformation". A 1993 study entitled *Some Thoughts on Military Revolutions* authored by Andrew Krepinevich was paramount in establishing "transformation" within the Department of Defenses' vocabulary. [12] Krepinevich argued that the distinguishing characteristic between evolution and revolution is the actual recognition and acceptance of change by those involved.[13]

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[11] Williamson Murray, *Military Innovation in the Interwar Period*, ed. Williamson Murray and Allan R. Millett (Cambridge: Cambridge University Press, 1996), 300.

[12] Debra O. Maddrell, *Quiet Transformation: The Role of the Office of Net Assessment*, Monograph, National Defense University (Washington: National War College, 2003), 3.

[13] Andrew F. Krepinevich, "Cavalry to Computer: The Pattern of Military Revolutions," *The National Interest*, no. 37 (Fall 1994), 30.

In 1995, Andrew Marshall, Director of ONA, testified to Congress, “Over the next twenty to fifty years a military revolution will transform the way wars are fought.”[14]

The conflict in Kosovo perpetuated the belief that technology could be used to solve all of the problems handed to the military. The newest buzzword in Washington was RMA and according to the Commander of NATO forces, Gen. Wesley Clark, RMA had lead to the “most accurate bombing campaign in history.”[15] During the entire Kosovo battle, there were no American casualties.[16] Technology had become the silver bullet, and successes in the Gulf War and Kosovo had given the military a means to significantly increase their capabilities, while within the DC beltway, RMA was a perfect means of gaining funds for a whole new generation of high tech weapons systems.

RMA theorists, especially those working for the Command and Control Research Program (CCRP), began investigating the application of RMA to emergent technologies in Information Dominance, resulting in Network Centric Warfare (NCW). NCW became the combination of advanced sensors, weapons, and C4I (Command, Control, Communications, Computers, and Intelligence) systems that networked units stationed around the globe, creating a system whose combined capabilities could gain Information Dominance over an adversary.

CCRP analysts expressed NCW as the cornerstone of RMA with the exception that technology was an enabler to a concept, as compared to being the actual RMA. The conjecture was that NCW was not technology born of military innovation, as with the earlier Cold War

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[14] Ken Silverstein, "Buck Rogers Rides Again," *The Nation*, October 25, 1999, 23.

[15] William Drozdiak, "Allies Target Yugoslav Phones, Computers," *Washington Post Foreign Service*, May 17, 1999, A1.

[16] Silverstein, "Buck Rogers Rides Again," 23.

engineers, but rather that it emerged from the civilian sector.[17] NCW was expanded on the idea of networking by adding the ability of entire organizations to be connected rather than merely computers interconnected in a network. The belief was that NCW would increase combat power through a network-centric force. Further, NCW was credited with the ability to enhance the Principles of War, specifically offense, economy of force, surprise, and unity of command. The common theme among all documents and theories of NCW was the conclusion that NCW emerged from the technologies and theories of the Information Age.

CCRP contended that another component of this RMA was EBO. The concepts of NCW and EBO combined to represent a *transformation* that extended beyond the new technology and systems, to tactics, doctrine, organization and concepts. The original EBO concept from the Air Force in the 90s (precision strike), coupled with NCW, provided a means to an end, which created promises for new ways for planners to address problem sets for the 90s and beyond.

The Promises

The first and most significant attribute of EBO was the ability of the military commander to accomplish his objectives through means other than destroying the enemy force's capabilities through annihilation or exhaustion. Historically, military doctrine has revolved around destroying the enemy head on rather than attacking the enemy as a complex system.[18] The first form of warfare, annihilation, was aimed at a "decisive battle", whereas, a strategy of exhaustion consists of both battle and maneuver, and battle is merely one of several campaigns to defeat the

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[17] David S. Alberts, John J. Garstka and Frederick P. Stein, *Network Centric Warfare: Developing and Leveraging Information Superiority*, 2nd Edition (Washington: Command and Control Research Program, 2002), 53.

[18] Admiral, *Effects-Based Operations: Enhancing Operational Art & Design in the 21st Century*, 2.

adversary.[19] To defeat the enemy without these strategies, EBO had to provide a new approach for victory through alternate means of engagement.

EBO was defined as the ability to accomplish objectives by causing desired *effects*. This methodology of tying technology to a target and *effects* to an objective resulted in less demand on resources and a reduction in damage or loss of life. Understanding that EBO was just a military means to an end, the application of EBO needed to be coupled with the efforts of other governmental organizations. This meant that EBO should be used as a means to accomplish national security goals and objectives in a unified fashion by linking all of the elements of national power, Diplomatic, Information, Military and Economic (DIME).

The question then becomes why is there so much confusion and opposition to incorporating the effects based approach into joint and Army planning doctrine? Is this a consequence of associating EBO with critiques of the revolution in military affairs and the Air Force's interest in understanding the enemy as a system vulnerable to the employment of precision weapons alone?

The Army has incorporated many EBO inspired concepts into its pamphlets and field manuals. The prevalence of EBO already extant in Army doctrinal literature is the result of the saga of EBO which research paper intends to discuss.

Summary of EBO Critique and Observations

Over the last decade, EBO proponents have attempted to bridge the gap between NCW and EBO by using a much broader, modern military application. Within the Joint Publications, EBO is generically discussed and many competing terms and definitions are introduced. These

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[19] Gordon A. Craig, "Delbruck: The Military Historian," in *Makers of Modern Strategy from Machiavelli to the Nuclear Age*, ed. Peter Paret (Princeton, NJ: Princeton University Press), 341.

definitions and terms sometimes contradict the Army definitions, which leads to substantial confusion. For instance, the terms *objective*, *aim*, and *goal* seem haphazardly intertwined, confused, and interchanged in various Joint and Service manuals and pamphlets.[20] The Army Field Manual for Operations, FM 3-0, discusses very little about EBO as a concept but, in FM 3-13, *Information Operations: Doctrine, Tactics, Techniques, and Procedures,* the term *effect* is mentioned over 220 times. Most recently, a TRADOC pamphlet entitled *Commander's Appreciation and Campaign Design,*[21] was published which specifically discusses complexity, operational problemization,[22] problem framing and campaign design; all of which are elements of the joint planning method using an effects-based approach.[23]

Critiques of EBO outlined many positives that the early air power theorists discussed with regard to the merits of air power, especially as offering an alternative to the strategies of exhaustion and annihilation warfare.[24] They also argued that this is not a new method of warfare but rather a means of codifying it into doctrine.[25] Supporters argued that EBO could maximize

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[20] Milan N. Vego, "Effects-Based Operations: A Critique," *Joint Forces Quarterly* (National Defense University Press, 2nd Quarter 2006), 51.

[21] US Army Training and Doctrine Command, *TRADOC Pamphlet 525-500-5 The US Army Commander's Appreciation and Campaign Design (CACD)* (Fort Monroe: Department of the Army, January 2008), 41.

[22] Problematize - The act of conceptually creating further problems within the system by adding complexity. The additional complexity manifests because of further deconstruction of an already complex and adaptive problem. Problematization is not merely the act of identifying the problems within the system.

[23] Department of Defense, *Joint Publication 5-0 Joint Operations Planning* (Washington: Joint Chiefs of Staff, 2006), III- 15.

[24] Barry Watts, Thomas A. Keaney and Eliot A. Cohen, *Operations and Effects and Effectiveness*, Vol. II, in *Gulf War Air Power Survey* (1993).

[25] Michael F. Carpenter, "Evolving to Effects Based Operations" (paper presented at the 9th International Command and Control Research and Technology Symposium, Copenhagen, Denmark, September 14, 2004).

current technology while simultaneously transitioning to new and emergent technologies.[26] Finally, proponents discussed using EBO in the emerging field of complexity and that EBO could be used as a framework for planning using the complexity concept.[27] The majority of favorable critiques focused on theory rather than actual application, with the exception of military publications in which the authors discussed Army units that had successfully implemented EBO in Afghanistan (2001) and Iraq (2003).[28]

As easy as it is to find favorable critiques, criticism is also readily available. Detractors focused their efforts on the confusion and ambiguity of the many terms and definitions in EBO literature.[29] Another charge has been that while the Air Force has implemented EBO as a concept, it has not been effective in incorporating EBO into its procedures for targeting and combat assessment.[30] A final charge commonly found in critical literature, places EBO in almost a "too-hard-to-do" category, citing "service parochialism and the rejection of the concept due to the 'not invented here' prejudice."[31]

Effects-based Operations, as currently discussed by military theorists and academicians, is hotly debated. Most of the current hostilities are generated by promises that EBO advocates

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[26] David A. Deptula, *Effects-Based Operations: Change in the Nature of Warfare* (Arlington: Aerospace Education Foundation, 2001), 17.

[27] Joint Forces Command, "*A Concept Framework for Joint Experimentation: Effects-Based Operations*." Concept paper, (Suffolk: U.S. Joint Forces Command, 2001).

[28] Robert B. Herndon, John A. Robinson, James L. Creighton, Raphael Torres and Louis J. Bello, "Effects-Based Operations in Afghanistan: The CJTF-180 Method of Orchestrating Effects to Achieve Objectives," *Field Artillery* (US Army Field Artillery School), January-February 2004, 26.

[29] Vego, "Effects-Based Operations: A Critique", 51.

[30] T. W. Beagle, *Effects-Based Targeting: Another Empty Promise?*, Master's Thesis, School for Advanced Airpower Studies, Air University (Maxwell: Air University, 2000), vi.

[31] Allen W. Batschelet, *Effects-based Operations: A New Operational Model?*, Master's Thesis (Carlisle Barracks: U.S. Army War College, 2002).

made in the 1990s. In October 2008, JFCOM Commander General James Mattis[32] discussed the common hostilities over the concept. In his article Mattis laid out his guidance and perceptions of EBO.[33] Mattis prefaced his comments by stating that there are several things that we must understand. First, the days of using just conventional forces were over; the modern military must maintain both regular and irregular warfare competencies. Second, the adversaries of the future will be adaptive and that the US will fight in a complex world in which a direct *causal predictive relationship* will not always be possible. Third, the concept that an application, which works in one theatre of operation, is universally applicable to all is incorrect. Finally, Mattis summarized these conditions by stating that history, "denies us any confidence that the acute predictability promised by EBO's long assessment cycle can strengthen our doctrine."[34] Mattis concluded by echoing the many concerns with EBO beginning with its misapplication within the levels of war by all services.

Another common argument against EBO is that there has been an attempt by not only Army but also Joint Forces to apply EBO at the tactical level of war. As defined by JFCOM, effects based operations are focused on the operational and strategic levels of war and are not designed for use by Army tactical forces.[35] Further, this misapplication makes EBO too prescriptive, over-engineered, and is staff, not command led, lending itself to the notion that the conduct of war is more science than art.

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[32] General James N. Mattis, USMC is the current Commander, U.S. Joint Forces Command (USJFCOM), and Supreme Allied Commander Transformation for NATO.

[33] James N. Mattis, "USJFCOM Commander's Guidance for Effects-Based Operations," *Joint Forces Quarterly* (National Defense University Press), no. 51 (4th Quarter 2008): 105-108.), 105.

[34] Ibid., 105.

[35] Headquarters Department of the Army, *FMI 5.01 Operations Process* (Washington: Department of the Army, March 2006), 1-7.

Other criticism suggests that EBO uses terminology that is too complicated to be understood, and that its application has been overextended through the mistaken belief it is universally applicable to different theaters of operations. Finally, it is argued that attempts to apply it in the human domain discount the human dimension of war.

Another point of contention about EBO is the confusion regarding complete understanding and predictive behavioral change. Critiques of EBO eagerly state that the hypothesis of "knowledge superiority" is a conceptual ideal that may never be achievable and may not be necessary to defeat the adversary. EBO advocates contend that once knowledge superiority is achieved then predictability of the adversary's actions will be possible. Critics' counter that this assumes a level of predictability which is not scientifically possible, and that coupled with the advent of complex adaptive adversaries, makes it impossible to correctly anticipate the reactions of complex systems. The argument then becomes, can EBO be implemented with the knowledge that is available or does it actually call for an unattainable level of knowledge of the enemy?

All the above arguments stem from the mechanics of EBO. As a concept, conducted at a military exercise like Millennium Challenge, EBO has its place.[36] Critics often posit that EBO lacks a doctrinal foundation and is being used as a "methodology", "planning process", "way of thinking" or any other of a half-dozen definitions. At present there is no consensus regarding what EBO is and how to use it.[37]

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[36] William F. Kernan, "Gen. Kernan And Maj. Gen. Cash Discuss Millennium Challenge's Lessons Learned," September 17, 2002, http://www.defenselink.mil/transcripts/transcript.aspx?transcriptid=3653 (accessed November 01, 2008).

[37] James N. Mattis, "USJFCOM Commander's Guidance for Effects-Based Operations", 105-108.

Finally, Army critiques state that EBO is non-doctrinal for the Army and has not been incorporated in joint doctrine.[38] They contend that the concept was pushed to the field before being properly vetted and validated. However, the concept of EBO in the Air Force and Joint Doctrine has evolved through a sequence of episodes culminating in a still ill defined concept that is on the verge of being eliminated from the military vernacular.

The Saga of EBO

There are two primary theories regarding EBO. First, from the Air Force, there is the concept of targeting based on the effects to be achieved or Effects-based Targeting (EBT). EBT is the use of the RMA (precision-strike) to create non-linear psychological effects and used as the focus of major combat. This effects-based thought can be traced through the Air Force theorists beginning with Guilio Douhet's strategic bombing theory of 1930s, to the precision strike theory of 1980s and 1990s and finally the works of John Warden and Brigadier General David Deptula. The commonality of all these theorists is the use of physical destruction to achieve a psychological *effect* on the adversary decision-maker. The focus has been on major combat operations, but targeting concepts are being applied to information operations and non-lethal means.

Second, there is the concept of operations based on the *effects* to be achieved or Effects-based Operations. This concept has its roots at the US Army Special Forces, and the US Marine Corps.[39] Both elements anticipate being on the battlefield in a disproportionate number to the enemy. To be successful, they either must employ methods of maneuver to surprise or confuse the enemy in order to create a psychological *effect* that they can exploit as a force multiplier.

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[38] Headquarters Department of the Army, *FMI 5.01 Operations Process*.

[39] Edward Smith, *Effects-based Operations: The Way Ahead,* (Herndon: Command and Control Research Program, 2006), 11.

Both the Air Force view and the "maneuver" view employ a basic stimulus and response approach, across a full spectrum of operations, and apply the elements of national power (diplomacy, political, military and economic). Further, regardless which of the above two employments of EBO are considered; EBO has its own pedigree.

The EBO Episodes

EBO has gone through six episodes of evolution beginning with the RMA. Each of these "Episodes" has been a continuation of a concept that did not take root in the Department of Defense (DOD) community (NCW), or was a means of securing funding (RMA), or a combination of both. The 1st Episode of EBO has been discussed earlier in this monograph through the concept of RMA. Second Episode of EBO grew out of post Cold War realities for the Western World by the emergence of new threats and challenges. These new challenges made it apparent that information management and superiority was essential on the battlefield and that all force elements needed to be interconnected. This became increasingly true when dealing with coalition forces. An exponential gap grew between US and North Atlantic Treaty Organization (NATO) capabilities. This meant that the ability of coalition forces to mass effects, without the capability of massing of force, had to be solved by transitioning from a platform-centric weapon system to a network-centric weapon system. The ability to have a full spectrum dominant force required *Dominant Maneuver* and *Precision Engagement*. The enemy has also changed. No longer would there be force-on-force exhaustive battle, a strategy of annihilation. The enemy was going to be more adaptive and function within complex urban environments. To be able to cope with this change, intelligence capabilities had to refocus on the social and cultural landscape to maintain situational awareness. To further this analysis of the enemy, military theorists turned to

the concept of Center of Gravity (COG)[40] analysis to examine the enemy as a system of capabilities and vulnerabilities instead of a target list of high-value items. These concepts were the focus of the majority of literature on 2nd episode of EBO (concepts of Dominant Maneuver, Center Of Gravity (COG) Analysis and 4th Generation Warfare).

The third episode of EBO embodied the concepts of John Warden and David Deptula. John Warden's concept of Concentric Rings depicted the enemy as a system and future war as parallel war.[41] Warden stated that technology would allow the US to attack multiple vital targets simultaneously at the strategic level thus collapsing the adversary's system and preventing the adversary from responding. Central to Warden's argument was that leadership was the most important element and should always be the focus of a strategic plan's effort.[42] This was not to suggest a pure targeting strategy to destroy the leadership but also a "parallel" attempt to influence the decision cycle of the leadership. Attacking each of the "centers of gravity" would create a physical paralysis, affecting the leader's mindset, influencing him not to resist. The overall theory was that neutralizing or destroying the leadership would result in a total physical paralysis of the system, while simultaneously attacking each of the "centers of gravity" creates an environment of partial paralysis that would inflict a tremendous psychological *effect* on the leadership.[43] This simultaneous attack or "parallel war" was the basis for Effects-Based Operations as described by Deptula.[44]

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[40] Joe Strange and Richard Iron, *Understanding Centers of Gravity & Critical Vulnerabilities* (Quantico, VA: USMC War College, 1996).

[41] John A. Warden III, "Strategic Warfare: The Enemy as a System," in *Concepts in Airpower for the Campaign Planner*, ed. Albert U. Mitchum (Maxwell AFB, AL: Air Command and Staff College, 1993), 4.

[42] Beagle, *Effects-Based Targeting: Another Empty Promise*, 17.

[43] Ibid., 22.

[44] Deptula, *Effects-Based Operations: Change in the Nature of Warfare*, 3.

Deptula's concepts relied upon the theory that the ability to project force in order to achieve an *effect* was more desirable than any actual presence on the ground, questioning the necessity and relevance of ground forces. From Deptula's perspective the Gulf War was the first war in which air power, not ground forces, played the dominant role in the victory. Based on this premise, EBO had the potential to reduce force requirements, casualties, the duration of the conflict, and even the forward placement of forces. This led to the idea that parallel warfare, according to Deptula, would be the primary means of warfare over both strategies of exhaustion and annihilation.

Both of these theorists attempted to redefine the concepts of mass and the physical presence of forces. In order to change the behavior of the adversary, targets must be specifically selected based on an analysis of which targets, if lost would lead to the collapse or paralysis of the adversary. This idea yields the greatest *effect* for the least effort or expenditure. Complexity, parallel thinking and cyclic planning characterize this form of EBO.

The Forth Episode of EBO is what has become the Air Force model of Effects-based Targeting (EBT). This is the ability of air power to be used to identify and destroy the adversary's key capabilities with the least amount of effort while achieving the greatest *effect* supporting the commander's objectives. EBT has an immense requirement to understand both the infrastructure of the enemy as well as his psychological nature. This capability is employed through Global Strike Task Force and Air Expeditionary Force.

The fifth Episode of EBO is the concept that has been adopted by the Joint Forces Command and employs concepts like Dominant Effects, Effects-based Joint Operations, Effects-based Planning and Long Term military Planning. Within Joint Doctrine the concepts of EBO have been explored, appended and removed. The initial document that contained information about *effects* was the *2004 Standing Operating Procedure (SOP) for the Standing Joint Forces Headquarters.* Following that document, a pamphlet was released entitled *Pamphlet 7 –*

Operational Implications of Effects-based Operations (EBO) dated 17 November 2004. Shortly thereafter, Pam 7's replacement, the *Commander's Handbook for an Effects-Based Approach to Joint Operations,* which included supplements 1 on theory and supplement 2 describing Operational Net Assessment was released. This handbook was designed to help elucidate concepts about the Effects-based Approach (EBA). The handbook's authors, recognizing that there was no universal agreement on how to employ effects and its related items, attempted to provide a common, practical baseline while the concept continued to evolve. Effects continued to influence doctrine with both JP 5-0 and 3-0 released in 2006.

The current form of EBO or 6th Episode is emerging from concepts like Influence Net, Systems Dynamics, and Input-Output modeling, to name a few. This concept of EBO requires an extensive knowledge of the cognitive domain. The cognitive domain is the "locus of the functions of perceiving, making sense of a situation, assessing alternatives, and deciding on a course of action".[45] In order to achieve this level of understanding, strategic intelligence capabilities and understanding the enemy's "centers of gravity" is essential. Within Complex adaptive systems, with unknown numbers of variables, actions have unpredictable outcomes. Modeling attempts to limit the variables and provide some sort of predictability. The concept of Operational Net Assessment (ONA) is an attempt to provide a continual stream of knowledge from adversary's vulnerabilities to be able to produce effects from tasks.

The Confusion

There is confusion and opposition to incorporating an effects based approach into Joint and Army planning doctrine that may be a result of resistance to ideas and concepts associated

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[45] Edward A. Smith, *Effects-based Operations: Applying Network-Centric Warfare in Peace, Crisis, and War* (Washington, DC: Command and Control Research Program, 2006), 173.

with, but not part of EBO. For example the Revolution in Military Affairs and the Air Force's interest in understanding the enemy as a system, vulnerable to the employment of precision weapons and discriminate air attack alone are highly controversial and often incorrectly, and unfairly associated with EBO. It is the merits of EBO, not related arguments postulated by EBO proponents that are considered in this monograph.

Brassey's Encyclopedia of Land Forces and Warfare, quotes a Russian military document as stating, "one of the serious problems in planning against American doctrine is that the Americans do not read their manuals nor do they feel any obligations to follow their doctrine." [46] This then begs the question, "So what if we don't understand the theory, origins or the actual process", if the Army is implementing portions of EBO effectively, is that not success? More than tacit incorporation of EBO may be needed, however, given the merits of EBO as a conceptual framework. At the Combined Arms Doctrine Directorate (CADD), Fort Leavenworth, Kansas, there is a push to rethink the way the Army makes decisions, postulating that a greater understanding of the environment and the true problem is necessary. This is encapsulated in the "Art of Design," in which concepts of iterative learning and complex problems are introduced.[47] Although the actual label of EBO may not be incorporated, the concepts and terminology may complement this emerging doctrine.

The Saga of Effects-based Operations

There is confusion on what exactly were the roots of an effects based approach to operations. Were the roots specifically resulting from emergent technologies? Was it because of global transition to the Information Age? Unlike network centric operations, Effects Based

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[46] Franklin D. Margiotta, eds., *Brassey's Encyclopedia of Land Forces and Warfare* ed. (Herndon: Brassey's, Inc. 1996), 295.

[47] School of Advanced Military Studies, *Art of Design: Student Text Version 1.0* (Fort Leavenworth, KS: Booz Allen Hamilton, 2008), 3.

Operations has a historical past that spans a millennium of conflict.[48] To gain a greater grasp of the significance to EBO, this section will investigate whether EBO is truly a "revolution in military affairs" [49] or is it the emergences of several concepts that are codified in doctrine that need only to be clearly defined and consolidated to operationalize[50] an EBO methodology based on joint doctrine.[51]

In October 2001, Dr. Williamson Murray and several other authors wrote a paper entitled "An Historical Perspective on Effects Based Operations." In this paper the authors analyzed past wars and compared them to the U.S. Civil War and World War II. The authors concluded that effects-based operations are not only not new but should be defined in a way that illustrates the values and the adaptability of EBO, from a US and adversary perspective.[52] Murray et al defines EBO as "a systematic approach to the operational cycle of analysis, planning, execution, and assessment that lead to the focused application of military and other capabilities to realize specific, desired effects at all the levels of war and in the face of friction, ambiguity, uncertainty, and adaptive adversaries."[53] One lesson identified in the paper was that there is an extended and steep learning curve for the staff regarding adaptation to Effects-based planning. For both the Civil War and World War II, learning was both costly in time and resources, especially lives.

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[48] Smith, *Effects-based Operations: Applying Network-Centric Warfare in Peace, Crisis, and War*, xxiii.

[49] Deptula, *Effects-Based Operations: Change in the Nature of Warfare,* 17.

[50] Operationalization is the process of defining a fuzzy concept to make the concept measurable in form of variables consisting of specific observations.

[51] Reginald J. Williams and Rocky Kendall, "Operationalizing Effects-Based Operations (An EBO Methodology Based on Joint Doctrine)," in *Command and Control Research and Technology Symposium* (Langley AFB, VA: ACC/XPSD, 2004), 1.

[52] Williamson Murray, *An Historical Perspective on Effects-Based Operations,* Draft Working Paper, Joint Advanced Warfighting Program (Alexandria: Institute for Defense Analysis, July 2001), 5.

[53] Defense Science Board, *Report of the Defense Science Board Task Force on Discriminate Use of Force* (Washington: Office of the Undersecretary of Defense for Acquisitions, Technology, and Logistics , 2003), 22.

Furthermore, from World War II forward, the link between the military leadership and civilian leadership has gained unparalleled intimacy. The separation between military commander and statesman has become irrevocably blurred. Military objectives have become more intertwined with strategic guidance and end state than ever before. The manner in which military planners attempt to change the environment in order to set conditions for these combined politico-military objectives and end state is the essence of effects based operations.[54]

Historians are quick to point out that EBO has not always been on the battlefield, and there are occasions in which it would have not been successful. The actual failures have not been cited just that success would not have been possible. This paradigm shifted in 1991. A white paper developed by the Air Combat Command stated, "…Effects-based warfighting approaches have been applied only sporadically throughout history and, for a variety of reasons, have met with inconsistent success."[55] The ACC stated that these inconsistent and sporadic successes could be largely attributed to the lack of technology.[56] Operation Desert Storm was the catalyst for EBO to be sprung into the spotlight. The technology had finally caught up with the methodology.

First Episode EBO

As discussed earlier the RMA was realized due to the decisive victory of the United States over Iraq in 1991. The total transformation of the RMA was realized due to the collapse of the Soviet Union and the US governmental shift to a smaller defense infrastructure in the 1990's. With the decrease in infrastructure and the shift toward technology this RMA was centered on the

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[54] Air Combat Command, *Effects-Based Operations*, White Paper (Langley AFB: ACC/XP, May 2002), iv.

[55] ibid, iv.

[56] ibid, 1.

integration of remote sensing systems with extremely lethal, precision-strike, weapons systems and high-tech command, control, and communications.

Dr. Edward Smith of the Command and Control Research Project, describes EBO by stating that its fundamental idea is to emphasize the political goals.[57] According to Smith, emphasizing the political goals transforms EBO from a mode of warfare to a "whole of government" approach that utilizes a full range of actions and capabilities of a nation to achieve a desired action from an adversary. Military operations should simply be focused on changing the behavior of the adversary instead of simply defeating its forces. However, this concept of a primacy of political aims and the use of military operations is in no way new. Students of military history would quickly point out that this is the basis of both Sun Tzu and Clausewitz' theories. The argument becomes, if EBO is something that has always been used, why is this now considered an RMA?[58] Smith contends that a part of the EBO RMA is network centric warfare, thus, to a large extent; technology has fostered the concept of EBO as a new way of examining the operational environment and the aim of operations based on a new complex adaptive system.[59] Therefore, if this is a new way of looking at the operational environment is it a planning methodology or just an analytical tool?

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[57] Smith, *Effects Based Operations, Applying Network Centric Warfare in Peace, Crisis, and War,* 47.

[58] RMA - The military concept of Revolution in Military Affairs (RMA) is a theory about the future of warfare, often connected to technological and organizational recommendations for change in the United States military and others. Especially tied to modern information, communications, and space technology, RMA is often linked to current discussions under the label of Transformation and total systems integration in the U.S. military.

[59] Smith, *Effects Based Operations, Applying Network Centric Warfare in Peace, Crisis, and War,* 46.

Second Episode EBO

The Second Episode of EBO characterizes EBO as a response to the uncertainty in strategic thought when the US faced emerging asymmetric threats in the post Cold War world. These new challenges made it apparent that information management and superiority was essential on the battlefield and that all force elements needed to be interconnected; especially in war that involves foreign militaries brought together as a coalition. As discussed earlier, the technological gap that grew between US and foreign militaries made it exponentially difficult to maintain command and control. This also made it almost impossible to mass effects due to an inability to mass efforts. The only means of providing this mass effect was to shift from a platform-centric weapon system to a network-centric weapon system. The ability to have a full spectrum dominant force required *Dominant Maneuver* and *Precision Engagement*.

The Second Episode of EBO also brought to light the changing enemy. With the great technological advancement and coalition warfighting, the concept of force-on-force exhaustive battle was no longer a desirable means of conflict, especially from the enemy's perspective. The enemy was going to be more adaptive and function within complex urban environments. To be able to cope with this change, intelligence capabilities had to refocus on the social and cultural landscape to maintain situational awareness. In order to enhance information and intelligence capabilities, theorist began developing analytical tools like of Center of Gravity (COG) which could be used to examine the enemy as a system of capabilities and vulnerabilities instead of a target list of high-value items. The concepts for this episode of EBO were Dominant Maneuver, Center Of Gravity (COG) Analysis, and 4th Generation Warfare.

Colonel Gary H. Cheek concluded in 2002 that there were too many different versions of EBO being discussed, and there was a dangerous possibility that the military was going to

implement a concept that still was ill defined.[60] His discussions can be summarized with three points.

First, Cheek cautioned that the ideas that Guilio Douhet theorized on as strategic bombing was not the same concept as strategic attack or effects-based operations. Cheek concluded that this concept would elevate air power far beyond joint operations and would be a risky proportion as the basis of the entire national defense. Cheek also saw this as a means to increase air power procurement and not as a strategic defense.

Second, the concept of using an effects-based targeting methodology as "part of strategic attack and operational fires in conjunction with dominant ground maneuver shows more promise."[61] The use of "centers of gravity" and critical vulnerabilities provided a foundation in which to develop a construct.[62] This construct could use COG Analysis concepts to properly drive an effects-based strategy for strategic and operational targets.[63]

Finally, Cheek determined that there are portions of EBO that have meaningful application to ground maneuver. At the strategic and operational level of war, EBO provides a useful "paradigm for leadership, professional schooling, wargaming, and experimentation."[64] He does caution that these concepts are not meant for the tactical level.

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[60] Gary H. Cheek, "Chapter 3: Effects-Based Operations: The End of Dominant Maneuver?," in *Transformation Concepts for National Security in the 21st* , ed. Williamson Murray, 409 (Carlisle Barracks: Strategic Studies Institute, September 2002), 94.

[61] Ibid., 95.

[62] Strange and Iron, *Understanding Centers of Gravity & Critical Vulnerabilities*, 43.

[63] Cheek defined the components of COG Analysis as the COG is identified using critical capabilities, critical requirements, and critical vulnerabilities.

[64] Cheek, "Chapter 3: Effects-Based Operations: The End of Dominant Maneuver?", 95.

Conclusion

The many concepts of effects-based operation make it too difficult to understand. This becomes even more problematic when "effects-based terminology" is used within doctrinal products without the proper refinement of the concept.[65] One constant conclusion was effects-based operations will not end the requirement for dominant maneuver. The concepts of Strategic Warfare, Parallel Warfare, and Strategic Paralysis developed as a counter to dominant maneuver. The concept was that technology has decreased the need for ground forces.

This Episode of EBO placed the concept in the broader context and identified how complexity entered into the security environment. Proponents introduced EBO as a framework to be able to identify and understand current and future operations in a unified coalition environment.

Third Episode EBO

The genesis of third Episode effects-based operations is said to have started with a planner at U.S. Central Command's (USCENTCOM) "Black Hole" led by Brigadier General David A. Deptula. But, the desire to control, as an alternative to destroying, the enemy has always been a major point of discussion for prominent military and air power theorists for decades. A historical review of the major airpower theorists suggests that this has been a common theme throughout their writings.

Italian air theorist Guilio Douhet developed the Douhet model in 1921.[66] The Douhet model was a strategy of exposing the civilian population to the realities of war by neutralizing the

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[65] Ibid., 96.

[66] Giulio Douhet, *Command of the Air*, trans. Dino Ferrari (New York, NY: Coward-McCann, 1942).

adversary's essential requirements of supply, transportation, and fuel by bombing vital civilian centers.[67] For Douhet, winning the war was not a matter of just destroying the adversary's military forces but in attacking the moral resistance of populace and eventually their national will to fight.[68] Douhet's argument was that the quicker the populace capitulated the greater the chance to limit the amount of destruction and death in the long term, as compared to the death and mutilation that was witnessed in trench warfare of World War I. The effect that Douhet wanted to create was influence, which would in turn achieve the objective of ending the war.[69] Douhet was not alone in his theories about influence and objectives. The U.S. military was considering the same aspects at the Air Corps Tactical School (ACTS).

In the 1920s, the Air Corps Tactical School (ACTS) engaged some of the brightest minds in regards to air power. One such pioneer was General William Mitchell. Mitchell, being a contemporary of Douhet, also argued that air power could achieve a military purpose that the other services could only do at an unacceptable cost in both resources and lives.[70] Mitchell did not believe that civilian population targets should be destroyed but did agree that the focus be to defeat the will of the people.[71] Though Mitchell initially began thinking of air power as a means to attrite the adversary's air power and defeat ground forces, he did eventually support the idea of "exploiting functional effects at the strategic level of war."[72] Mitchell and other military members

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[67] Robert A. Pape, *Bombing to Win: Air Power and Coercion in War* (Ithaca, NY: Cornell University Press, 1996), 60.

[68] Beagle, *Effects-Based Targeting: Another Empty Promise?*, 16.

[69] Pape, *Bombing to Win: Air Power and Coercion in War*, 60.

[70] Ibid., 65.

[71] Beagle, *Effects-Based Targeting: Another Empty Promise?*, 17.

[72] William Mitchell, *Winged Defense: The Development and Possibilities of Modern Airpower - Economic and Military* (New York, NY: Dover Publications, 1988), 127.

of the ACC were not alone when looking at influence as a valid effect, social scientists within academia were also theorizing about this concept at the same time.

Social scientist Thomas Schelling, in his book Arms and Influence[73] identified the most important aspect of military coercion as the ability to manipulate risk.[74] Schelling believed that it was necessary to raise the risk to the civilian population slowly, in other words, sanctions on essential life sustaining needs, which would result in the adversary's decision to quit in order to avoid further suffering. Schelling's model, like Douhet's, focused on the civilian population and economic infrastructure. Where Schelling's view differed from Douhet's, he believed that a single "mass" attack against the civilian population would not work; it was the slow drawn out anticipation of future destruction that was the key.[75]

John Wardens' Five Concentric Rings propelled the former USAF colonel into the annals of innovative military theorists. Colonel Warden established a theory of strategic attack based on five levels of system attributes: Leadership, Organic/System Essentials, Infrastructure, Population, and Fielded Military Forces. Warden believed that all strategic entities should be considered a system and could be categorized into the five elements.[76] Each level of system or "ring" was considered one of the adversary's "centers of gravity". The center ring, leadership, was the most critical element. The theory was to attack each of the rings to achieve an objective known as physical paralysis.

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[73] Thomas C. Schelling, *Arms and Influence* (New Haven: Yale University Press, 1966), 2.

[74] Pape, *Bombing to Win: Air Power and Coercion in War*, 66.

[75] Schelling, *Arms and Influence,* 3.

[76] John A. Warden III, "Strategic Warfare: The Enemy as a System," in *Concepts in Airpower for the Campaign Planner,* ed. Albert U. Mitchum (Maxwell AFB, AL: Air Command and Staff College, 1993), 4.

To maximize the effect, each ring would not be attacked sequentially but rather as many rings as possible would be engaged simultaneously, with special emphasis on taking out the leadership. This would result in total physical paralysis. Central to Warden's argument was that leadership was the most important element and should always be the focus of a strategic plan's effort.[77] This is not to suggest a pure targeting strategy to destroy the leadership but also to influence the decision cycle of the leadership. The idea of attacking each of the "centers of gravity" would create the physical paralysis once again affecting the leader's mindset influencing him not to resist. The overall theory is that neutralizing or destroying the leadership would result in a total physical paralysis of the system, whereas attacking each of the "centers of gravity" would create an environment of only partial paralysis but that partial paralysis would inflict a tremendous psychological effect on the leadership.[78]

Warden's theories on the application of air power in modern war have been criticized as little more than a reiteration of earlier strategic bombing concepts but Warden argues that "technology has made possible a near-simultaneous attack on every strategic and operational level vulnerability of the enemy."[79] This simultaneous attack or "parallel war" is the basis for Effects-Based Operations a described by Brigadier General David Deptula.[80]

Deptula's concept of Effects-Based Operations (EBO) is a concept for the planning and conduct of joint operations combining military and non-military elements of national power to achieve a particular effect. Once again, Deptula, with other Air Force theorists, explains that EBO

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[77] Beagle, *Effects-Based Targeting: Another Empty Promise?*, 17.

[78] Ibid., 22.

[79] John A. Warden III, "Strategic Warfare: The Enemy as a System," in *Concepts in Airpower for the Campaign Planner*, ed. Albert U. Mitchum (Maxwell AFB, AL: Air Command and Staff College, 1993), 8.

[80] Deptula, *Effects-Based Operations: Change in the Nature of Warfare*, 3.

emerged after the first Gulf War in 1991. In articles written by Deptula post-Desert Storm, he states that historically, military warfighting doctrine has revolved around a strategy of annihilation or a strategy of exhaustion.[81] Once again defining the first form of warfare, annihilation, as aimed at a "decisive battle." Whereas, a strategy of exhaustion consists of both battle and maneuver, in which a battle is merely one of several campaigns in order to defeat the adversary.[82] Deptula recognized that military (specifically Air Force) targeting manuals discussed how to achieve an effect but was typically devoted to the best method of inflicting the greatest levels of destruction against the adversary's personnel and equipment, which stemmed from the traditional strategies of war, annihilation and exhaustion.[83]

Deptula determined that by combining the changes that occurred in 1990 with a reliance on technology, the military could develop a war fighting concept for future engagements. From Deptula's view, the campaign plan for Desert Storm was designed to "(1) paralyze Saddam's control of forces, (2) neutralize the enemy's capability to fight, (3) undermine his will to fight, (4) reduce his military production base, and (5) control his capacity to build Weapons of Mass Destruction."[84] This campaign was a concept of warfare called *parallel warfare* and was based upon achieving effects. With traditional annihilation strategy, the planner would craft a list of all targets within an area of operation and the operator would go through to sequentially destroy each of the targets until targets on the list were destroyed.[85] Deptula determined that it was not necessary to destroy an entire list of targets but the effects could be achieved by selective targets

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[81] Admiral, *Effects-Based Operations: Enhancing Operational Art & Design in the 21st Century,* 2.

[82] Craig, "Delbruck: The Military Historian", 341.

[83] Deptula, "Effects-Based Operations: Changes in the Nature of Warfare, 11.

[84] Ibid., 11.

[85] Gary L. Crowder, *Effects-Based Operations Briefing*, Transcript, Department of Defense (Arlington: FDCH Political Transcripts, 19 March 2003).

this revealed the difference between serial (sequential) and parallel (simultaneous) warfare. This concept yielded the term Rapid Decisive Operation (RDO). RDO seeks to achieve a similar result as EBO with the exception of greater rapidity and less mass. This concept would effectively give control over the enemy's operational level forces and paralyze him from functioning at the strategic level. The object of parallel war was to achieve control over the power of the adversary and influence him with enough parallel attacks that he could not reconstitute forces to keep critical functions operating.[86] From Deptula's view, parallel war was just a manifestation of the RMA with EBO as the enabler.

The third Episode EBO concepts still come into play throughout the early 2000s. The Air Force once again stressed the importance of EBO during the Quadrennial Defense review in 2001.[87] The Air Force refers back to the successes of Desert Storm and instead of discussing the cost per weapon, the Air Force attempted to shift the conversation to cost per target engaged. General Deptula noted that the F-117 airframe was highly effective in the first hours of Desert Storm in striking key targets. This usage of EBO would then springboard the discussions into the acquisition of a new Air Force platform the F-22.[88]

Conclusion

This Episode of EBO offered to the defense community the concept that conducting war in a complex environment required parallel thinking and planning in cycles. This begins the

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[86] Deptula, *Effects-Based Operations: Change in the Nature of Warfare*, 15.

[87] Frank Wolfe, "Air Force Officials to Emphasize Effects-Based Operations in QDR," *Defense Daily* (Access Intelligence, LLC, January 2001).

[88] David A. Deptula, interview by Defense Today, *Capability Insight: Maintaining Air Dominance in the Pacific*, (Washington: Access Intelligence, LLC , March 2006).

analysis of the adversary as a complex system, which basically defines the actors with numerous interactions between sub-systems and entities.

This Episode of EBO could be viewed as the theoretical underpinning of today's joint concept and definition. Strategic Warfare, Parallel War and Strategic Paralysis are the three pillars on which EBO rests. With these concepts, Complexity theories, determine how system elements react and interact with each other as pressure is being applied to the system. Even with these theories, understanding exactly how an adversary is going to react or act is almost impossible to predict. While Warden's and Barlow's models provide a good model of the adversary, they do minimal to express these actions, especially when culture and situations are injected. These models are sufficient to determine effects within the physical domain but do little in the information and cognitive domains of conflict.

Since effects-based operations focus on psychological effects as determined by the human factor and EBO is somewhat limited to the physical domain, this greatly limits its capabilities and utilities. Never the less, this Episode of EBO did setup the next especially as it pertains to the concept of Rapid Decisive Operations.

Fourth Episode EBO

In June 2000 there was a series of future warfighting experiments conducted known as Rapid Decisive Operations (RDO). This concept exploited advantages in knowledge, precision and mobility to create a "shock and awe" effect on the ability of the adversary to conduct war both in ability and will. This would provide an approach to warfare with a synchronized National

Campaign Plan (NCP). The NCP would involve an integrated effort between the military and other elements of national power that were historically separated by bureaucratic interests. [89]

The outcome of the experimentation was that RDO and EBO could now be envisioned as actors in a Complex Adaptive System (CAS).[90] This form of EBO increased the research into technology advancements in communication distribution, data-mining, graphical displays and social / demographic modeling. All of these concepts were necessary in order to achieve the required knowledge superiority to successfully implement EBT / EBO.

The new concept of EBO at this time stated that EBO now had the ability succeed in current and future conflicts by reducing the duration of battle and the size of the force structure to achieve the same political objective. This would be the new essence of EBO, make the enemy conform to our strategic plan.

EBT was identified as the way (method) to identify and engage the adversary's key critical capabilities. This would extend an analysts ability to look at a physical overlay of the enemy but also to study his cultural history and understand his psychological make-up.

Major T. W. Beagle of the School for Advanced Airpower Studies concluded in his 2000 monograph that this form of EBO provided three conclusions. First, EBO as a means to specify effects is in line with the historical context of senior decision makers have always been interested in achieving effects over simply destroying targets. Second, the Air Force has made significant effects-related improvements at the tactical levels of war, but minimal at the operational. Third,

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[89] William M. Arkin, "A New Mindset for Warfare," *Washington Post*, September 22, 2001.

[90] Paul K. Davis, *Effects-based Operations, A Grand challenge for the Analytical Community*, Monograph, National Defense Research Institution (Arlington: RAND, 2001), 23.

air power has become very effective at producing effects in the physical domain and has shown promise in creating overall systemic effects.[91]

Here the concept of unintended consequences begins to be shaped. The idea that there is a difference between collateral damages and unintended damage is discussed. Collateral damage can be expected when attacking a system or a specified target. Unintended damage occurs when there is a failure of a mechanical device or the result of inaccurate intelligence.[92] An example of unintended damage was the bombing of the Chinese Embassy during Operation Allied Force.[93] Though it is impossible to conduct a war without collateral and unintended damages, the best method of mitigating this risk it to strike only necessary target and avoid the "list of targets" strategy.[94]

General Deptula was also involved in propagating this form of EBO. His angle was that of transformation. Deptula believed that transformation was a fundamental change to the military structure and involved three principle elements. First, there was the traditional advance in technology, the mainstay for the Air Force. Second, there was a new concept of operations and thirdly, with new technology and operations, a need to change the organization's structure.[95] Deptula expanded his concept of transformation to include all services and other Elements of National Power (ENP). This was going to be achieved through an effects-based approach that "provides a perspective for planning, executing and assessing military operations by integrating

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[91] Beagle, *Effects-Based Targeting: Another Empty Promise?*, 95.

[92] Crowder, *Effects-Based Operations Briefing*.

[93] Wesley K. Clark, *Waging Modern War: Bosnia, Kosovo, and the Future of Combat* (New York: Public Affairs, 2002), 296.

[94] Crowder, *Effects-Based Operations Briefing*.

[95] David A. Deptula, "Air Force Transformation, Past, Present, and Future," (Aerospace Journal) XV, no. 3 (Fall 2001): 85.

other ENP to produce effects that compel desired political outcomes."[96] EBO was also a possible solution to ensuring that damage and loss of life were minimized. This would be accomplished by precision and independently targetable weapons which would provide a Circular error Capacity (CEP) of less than 10 feet.[97]

Once again, competing concepts regarding futuristic war tied to a confusing and loosely defined EBO construct has been a common thread throughout the EBO Episodes. During this Episode, the use of EBT brings the concept of EBO to the battlefield. The issue here becomes: in order for EBT/EBO to be successful there has to be an increase in US intelligence capability greater then what is currently available.[98] The ability to predict and possibly generate psychological effects may be too far of a reach for EBO.[99] The key to successful executing EBO lies in the development of the objectives. Linking strategic, operational and tactical objectives would require a unified and delineated chain of command. The ability to choose the "right" targets would require a significant synchronized effort of all intelligence capabilities. This would require analysts to have a far-reaching understanding of more than the enemy's order of battle, but his entire social and cultural fabric.

During this phase, EBT has lacked a solid means of assessment beyond BDA (battle damage assessment). The assessment of the cognitive domain still remains challenging due to the attempt to determine effects beyond physical structures. These effects cannot normally be collected by imagery (IMINT) but has to be collected by actual signals (SIGINT) or by human

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[96] Ibid, 91.

[97] David A. Deptula, "Air Force Operations Concept Aims at Success, Not Destruction, "Effects based operations" a new but ancient military concept," *Issues in Focus* (International Information Programs), March 2003.

[98] William M. Arkin, "A New Mindset for Warfare," *Washington Post*, September 22, 2001.

[99] Beagle, *Effects-Based Targeting: Another Empty Promise?*, 96.

intelligence (HUMINT). The challenge to collect what would be required would be significantly greater but so to would the running analysis of the impact of effects over time. Due to the lack of assessment and a physical planning process, Effects-based Joint Operations evolved to fill the void.

Conclusion

The greatest issue with Deptula's transformation is that it hinges on the idea that military planners will have "superior knowledge" so that a strategy of annihilation will not have to be emplaced. This "knowledge superiority" is relative to the ability of the adversary to gain knowledge. This concept is limited to the wants and needs of the adversary and the friendly's requirements. Deptula's ideas of expanding EBO to include planning, execution, operations, and assessment are key to the current Joint Planning construct.

Fifth Episode EBO

The Goldwater-Nichols Act of 1986 made the Chairman of the Joint Chiefs of Staff responsible for "developing doctrine for the joint employment of the armed forces." [100] According to FM 3-0, "Army doctrine is consistent and compatible with the joint doctrine."[101] These two statements would suggest that joint doctrine and Army doctrine should not only be conceptually compatible, but where applicable should use consistent terms. The Preface of FM 3-0 notes that the document will use joint terms were applicable, yet when it comes to effects-based operations and effects-based terms there still appears to be confusion. According to joint publications, "an effect is a physical and/or behavioral state of a system that results from an

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[100] U.S. Code Title 10, 153

[101] Headquarters Department of the Army, *Field Manual 3-0, Operations* (Washington: Department of the Army, 2008). V.

action, a set of actions, or another effect."[102] Joint doctrine in regard to planning uses the term effects to show the interrelationship between objectives and tasks. The simplest way to look at this is to understand that according to joint doctrine, objectives "prescribe" goals, tasks "direct" actions, and effects "describe" how the system behaves based upon the completion of tasks towards the goal.[103]

The "describe" aspect of defining effects can also lead to some ambiguity. Typically, effects are designed with four primary considerations. Given that an effect is the bridge between objectives and tasks, an effect must first be linked to an objective. The desired effect must also be measurable, should not specify the method or resources, and finally should be distinguishable from the objective since its purpose is to set a condition for success at the operational level.

Effects-based operations are typically discussed in regards to effects that occur not only at the various levels of war but also across three domains.[104] During 1999 and 2001, the Office of the Secretary of Defense (C3I) sponsored a symposium on the concept of "sensemaking".[105] The symposium consisted of several workshops that explored a method to expand the OODA loop (Observe, Orient, Decide, and Act concept proposed by Colonel John R. Boyd, USAF) by creating additional steps. The purpose of these additional steps was to better assist in decision-

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[102] Department of Defense, *Joint Publication 5-0 Joint Operations Planning* (Washington: Joint Chiefs of Staff, 2006), III-12.

[103] Ibid., III-14

[104] Smith, *Effects-based Operations: Applying Network-Centric Warfare in Peace, Crisis, and War*, 173.

[105] Sensemaking is defined as the process of creating situation awareness in situations of uncertainty. (Final Report Sensemaking Symposium 23-25 October 2001, 8.)

making. They described the expanded OODA loop in terms of three different domains: a physical domain, an information domain[106] and a cognitive domain.

The physical domain was described as the place in which physical military actions could be detected and reported. The ability to report these actions would be done through transmission in the information domain. Once the action was reported through the information domain, the decisions makers would respond with a counter-action by making decisions within the cognitive domain. This concept seemed to be limited to military actions and decision makers. The symposium expanded this concept once again to include all of the actions of state and non-state actors or governments.

The symposium report observed that the three domains of conflict could provide a general framework that could be overlaid on decision cycles based on actions, perceptions and decisions by individuals and organizations. Further, it provided a means of determining how actions result in not only physical effects but also psychological effects. This was the basis for network centric warfare and Effects-based operations.[107]

At the tactical level, actions that create operational effects are normally achieved through direct action against targets within the physical domain. The attack upon a target is first order of effect. These effects are normally easily recognizable and immediately measurable because they are normally the result of a physical weapon system striking a physical target. There will be changes internal to the system that influences the information and cognitive domains of the

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[106] The information domain is an abstract space where information exists and flows between receptors. The information domain consists of information itself, but is also the medium in which the functions of information systems occur. The information domain links the physical domain (human actions) to the cognitive domain (human consciousness), because this is how political and military leaders collect, process and disseminate orders throughout the command and control system.

[107] "Final Report Sensemaking Symposium 23-25 October 2001" (Washington: Command and Control Research Program Office of the Assistant Secretary of Defense for Command, Control, Communications and Intelligence. 2001), 8.

overall system. [108] If consequences are undesirable effects then they are simply consequences of the direct military actions within the physical domain.

Another issue that is readily apparent when both the Army and joint doctrine is read is the absence of definition for the term "complex". In FM 5-0, *Army Planning and Orders Production*, the authors seem to concur with the idea that complexity is based on the idea of not being able to link cause-and-effect when referring to a complex endeavor. This idea follows from the observation that complex endeavors are "struggles between opposing human wills."[109] According to Army doctrine, it is impossible to predict, with any type of certainty, on exactly how a thinking enemy would act or react. Doctrine currently in draft would also include not only the enemy, but also how a populace acts. Consequently, the fundamentals of planning in a complex system would seek to develop a framework for conducting operations within the system rather than for eliminating uncertainty.[110]

A common argument in the critique of EBO is that EBO doctrine frequently interchanges terms like aims, goals, and objectives.[111] This tendency seems to be more common in discussions of EBO than in publications. According to TRADOC Pamphlet 525-5-500, *Commanders Appreciation and Campaign Design*, the term "aim" at the strategic level implies a great deal of ambiguity. Whereas the term objective is a "clearly defined as decisive, and attainable goals towards which every military operation should be directed."[112] The distinction suggests that the

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[108] Smith, *Effects-based Operations: Applying Network-Centric Warfare in Peace, Crisis, and War*, 173.

[109] Headquarters Department of the Army, *Field Manual 5-0, Army Planning and Orders Production* (Washington: Department of the Army, 2006), 1-1.

[110] Ibid, 1-3

[111] Vego, "Effects-Based Operations: A Critique", 51.

[112] US Army Training and Doctrine Command, *TRADOC Pamphlet 525-500-5 The US Army Commander's Appreciation and Campaign Design (CACD)*, 41.

term aim should only be used when discussing the national strategic end state and not discussing the strategic military objectives. In regards to the term goal, it is found neither in Army operations planning nor in joint operations planning publications. It is typically only used when individuals are briefing or discussing different aspects of an operation. Therefore, because there is no doctrinal term "goal", military planning and execution cannot be based on it and "goal" should be eliminated from military jargon and the appropriate term (objective) used instead.

EBO as a methodology, according to USAF Air Combat Command's (ACC) EBO White Paper is a methodology for planning, executing, and assessing operations designed to attain the effects required to achieve desired national security outcomes."[113] This methodology would link operational objectives to tactical-level actions through a specified set of effects. In order to "achieve desired national security outcomes", EBO provides a synchronization of "ends, ways, and means" using a harmonized application of the instruments of national power.

The Chart of Confusion

Deep within the pages of Joint Publication 5-0, *Joint Operation Planning* lays a chart; figure III-1 *Effects and Command Echelons* that looks very simple, but is one that creates great confusion within the military.[114] According to the publication, the Combatant Commander has a responsibility to plan joint operations. These joint operations are based on an analysis of both national and theater strategic objective that must be supported by measurable strategic and operational desired effects. According to figure III-1, entitled "*Effects and Command Echelons,"* there are four levels of war: National strategic, theater strategic, operational, and tactical. The

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[113] AU/CADRE, Effects-based Joint Operations, White Paper, August 2001, 19.

[114] Department of Defense, *Joint Publication 5-0 Joint Operations Planning* (Washington: Joint Chiefs of Staff, 2006), III-1.

national strategic level guidance specifies both a desired end state and an objective. At the theater strategic level, guidance emerges in the form of mission, effects, and tasks. Now, joint doctrine includes effects as an element within campaign design. These effects are achieved at both the theater strategic and operational levels of war. Joint doctrine proposes that at the tactical level of war the elements are simply mission, objectives, and tasks. At the strategic and operational level, the desired effects are crafted to focus on the overall system primarily in the information and cognitive domains. This is not to suggest that there are not consequences at the tactical level but the tactical actions typically result in indirect-effects and are often "less observable or recognizable than direct effects"[115] and typically influence the military system, whereas operational and strategic effects reside within the operational environment.

Conclusion

The USAF Air Combat Command's (ACC) EBO White Paper states an effects-based approach is "one where operations against enemy systems are planned, executed, and assessed in order to achieve specific effects that contribute directly to desired military and political outcomes."[116] This definition contains both an objectives-based and a targeting-based approach instead of one being substituted for the other.[117] Within the targeting-approach, EBO is focused on looking at the enemy as a system and emphasizes analysis on the basis of a system of systems approach (SOSA). This analysis would provide a systemic situational awareness and understanding of the adversary and operational environment. Another characterization of the White Paper's definition is the focus on desired effects not on task development or completion.

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[115] Ibid., III- 15.

[116] AFDC White Paper March 2004

[117] Objectives-based approach meaning that the overall objective of the mission is defined and targeting-based approach in regards to the enemy's system not exclusive to its capabilities.

Even within this definition there grows some confusion arises, mainly with reference to the term effects.

The White Paper defines effects as "outcomes, events or consequences that result from a specific action."[118] Since all effects cannot be predicted they are categorized as indirect, cumulative, collateral and cascading. Specifically, indirect effects are those that are "created through an intermediate effect or mechanism." Cumulative effects are the "aggregate result of many direct or indirect effects." Collateral effects are "the outcomes that result when something occurs other than what is intended", sometimes referred to as "unintended consequences". Cascading effects (or effects cascading) refers to "indirect effects that ripple through an adversary system, often affecting other systems". Cascading effects are normally mis-labeled within the U.S. Army lexicon as 2nd and 3rd orders of effects.

Within an objectives-based approach an analytical approach is conducted to determine which tasks need to be completed to have a cumulative effect to reach a desired objective. Specifically, at the operational level of war, the commander determines the objective to be completed within the commander's intent. This is then delegated to the tactical level as mission and tasks. The intent is that once the mission is completed, the accumulation of the tasks will achieve the objective. An objectives-based approach focuses on what to attack and for what purpose. This is focused at every level of war and includes a "strategy to task" linkage, in other words all objectives are linked. This methodology *implies* that the destruction of the targets based on tasks results in objective completion.

Within the EBO methodology there is a focus on desired effects to include the objectives. This also takes into consideration all effects especially those that are unintended. This

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[118] AFDC White Paper March 2004

methodology *specifies* the required results between the tasks and the objectives. EBO methodology also considers the enemy reaction and ability to adapt. This methodology incorporates both the objectives-based and target-based methodologies.

From a theoretical perspective the linkage is constructed by stating that the action from a task, through causal linkage, leads to effects that achieve an objective. From a planner's perspective the opposite must be drawn. First the objectives are determined, then the desired and undesired effects, followed by the task. Causal links are used in lieu of direct links due to the nature of a complex system as compared to a complicated system. The causal link is a predication of why the task should lead to a desired effect. This is paramount for the military planner because these causal links are what determines the appropriate task.

A major difference between the standard Strategy-to-task methodologies is that tasks are specific to one objective. An EBO methodology incorporates numerous tasks that can support different effects and that a single task may have several effects supporting numerous objectives.

USJFCOM describes EBO as an approach that improves planning, execution and assessment of joint operations at the strategic and operational levels of war.[119] For USJFCOM, the aim of this concept enhances the achievement of national and theater strategic objectives by improving adaptation and flexibility at the strategic level of war.[120] At the Operational level, EBO methodology includes organization (to increase unity of effort) and Integrated planning. Simply, EBO/A can be divided into four components: knowledge based development (joint context and systems perspective), effects-based planning, effects-based execution, and effects-based

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[119] Joint Warfighting Center, *Commander's Handbook for an Effects-Based Approach to Joint Operations* (Suffolk: Joint Concept Development and Experimentation Directorate, 24 February 2006), I-1.

[120] Ibid., IV-6.

assessment. These components are not to be executed sequentially but as part of a learning model occur simultaneously.

Within the Army a common observation is that different commanders and staffs use effects interchangeably with different joint and Army terms. This confusion is exasperated especially with terms like end state, aim, mission, goal, objective, tasks, and purpose. While effect is void within the current FM 3-0 and FM 5-0, FMI 5-0.1 defines effect as "a result, outcome, or consequence of an action."[121] A proposed definition being considered by the FM 3-0 writing team defines effect as "a physical, psychological, or functional outcome or consequence that results from a specific action or event." This definition encompasses the idea of an effect, the essence of EBO. FMI 5.01 continues, discussing that effects may be either direct or indirect and those they may have both desired and undesired results. These undesired effects may have a negative impact on the accomplishment of the mission. Again, despite the Army's refusal to even acknowledge the term EBO, the definition of effect very is similar to the Joint understanding.

Sixth Episode EBO

Sixth Episode EBO is characterized by a desire to understand the cognitive domain as a consequence of EBO requirements to influence the decision makers as part of a successful effort. The concept of Operational Net Assessment as a means of gaining Knowledge Superiority provides the critical cognitive understanding.

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[121] Headquarters Department of the Army, *FMI 5-0.1 Operations Process* (Washington DC: Department of the Army, March 2006), 1-10.

Knowledge Superiority

Knowledge superiority is the foundation upon which EBO rests. In order to establish a knowledge advantage over the adversary a systemic understanding of the operational environment is necessary. This detailed understanding and situational awareness of the adversary must include all levels of war.

Within mission analysis, the combatant commander and his staff perform this analysis by using collaboration capabilities and the process called operational net assessment (ONA).[122] The process of ONA is used to develop the operational environmental understanding. Whereas, situational awareness is an analysis of a specific place and time. This situational awareness is enabled by maintaining a common operational picture (COP). The richness of ONA is its integration of people, processes and tools from multiple collection assets. Using these, the staff can create running estimates that build a common, shared, holistic knowledge of the operational environment at the operational-level of war.

Once the combatant commander sets a priority within his area of responsibility (AOR) the staff then begins to focus on that area doing a system-of-systems analysis (SOSA).[123] According to Joint Warfighting Center Pamphlet 4, Doctrinal Implications of Operational Net Assessment (ONA) from February 2004, SOSA is a continuing process throughout ONA. SOSA is focused on six interrelated systems: political, military, economic, social, infrastructure, and information (PMESII). Within each of these systems are nodes. A node is described as a person,

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[122] Operational Net Assessment (ONA). The integration of people, processes, and tools that use multiple information sources and collaborative analysis to build shared knowledge of the adversary, the environment, and ourselves.

[123] System-of-systems analysis (SoSA). A process that views the adversary as an interrelated system of political, military, economic, social, infrastructure, and information (PMESII) systems. SoSA attempts to identify, analyze, and relate the goals and objectives, organization, dependencies and inter-dependencies, external influences, weaknesses, vulnerabilities, and other aspects of the various systems.

place or physical thing which is a component of each system and the link or functional relationship between each other. An additional model or construct that is then assembled is the relationships that can be influenced using the diplomatic, informational, military, and economic (DIME) instruments of national power. The purpose is to "identify, analyze, and relate the goals and objectives, organization, dependencies and inter-dependencies, external influences, strengths, vulnerabilities, and other aspects of the various systems."[124] This understanding is based on the intelligence, surveillance, and reconnaissance (ISR) which emphasis where assets are focused for the collection of desired information for both knowledge and situational awareness. Each of the various elements of the PMESII system is assessed for vulnerabilities. Once these are identified this leads to identifying the adversary's "centers of gravity" (COG). Once the COG is identified and the vulnerabilities established they can be exploited in order to achieve the desired effect.

The final product of ONA is a nodal analysis that establishes an effects-node-action-resource linkage. [125] This linkage is necessary in order to develop a relationship between the effect, actions to nodes, and the resources necessary to complete the objective. A byproduct of this analysis is the identification of unintended consequences. This final ONA product populates a relational database application with linked effects, nodes, actions, and resources. This database is then used by planners for planning effects-based courses of actions (COAs), operations, effects assessment, and situational awareness.

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[124] Joint Warfighting Center Pamphlet 4, Doctrinal Implications of Operational Net Assessment (ONA), February 2004, 5.

[125] Joint Warfighting Center Pamphlet 4, Doctrinal Implications of Operational Net Assessment (ONA), February 2004, 8.

Conclusion and Recommendations

Is it just semantics?

The Army has embraced the idea of complex adaptive systems and other theories that are widely discussed within academic circles and it should follow that all the terms within the military vocabulary correspond to definitions commonly found in academic literature. The military planner ought to take pains to ensure that each term is doctrinally sound. Unfortunately, when it comes to briefings and discussions the mental agility required to ensure uniform understanding seems to be somewhat relaxed. The importance of a clear definition may seem trivial. However, without a clear definition the incorporation of academic literature into staff planning processes creates confusion about how terms are used in proper effects-based planning.

The question becomes, "Is there a deceptive misrepresentation of the true intent or is the misrepresentation merely inadvertent?" During a planning session or when simply guidance is being given, there may be a sense that the exact definition of a word may be trivial or vague. This lends itself to making the discourse or discussions "not to the purpose" which lends itself to be too broad and vague. [126] There may be a time and place when ambiguity and vagueness are necessary, typically at the strategic level and not at the operational and tactical levels of war. The interchangeability that planners tend to use when it comes to terms like aims, goals, and objectives will be discussed later.[127] It is important to understand, especially in a joint environment, each of these terms may have specific consequences when used interchangeably.

It is important to realize that ideas are elements that exist in the cognitive domain and remain as isolated thoughts till the individual has the ability to communicate the ideas through

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[126] Harry G. Frankfurt, *On Bullshit* (Princeton: Princeton University Press, 2005), 42.

[127] Vego, "Effects-Based Operations: A Critique", 51.

verbal, non-verbal or written communication to the observer. Without written or verbal communication, the observer is left to interpret the message based on "conscious reasoning, the domain of reason, and partially upon its subconscious mental models, the domain of belief.[128]" The cognitive domain is the "locus of the functions of perceiving, making sense of a situation, assessing alternatives, and deciding on a course of action".[129] Two terms that heavily influence the cognitive domain, and are commonly confused, is knowledge and understanding. Knowledge is based upon different experiences that an individual may have through education, training, and experience. These normally occur through direct experience with the physical domain, interaction with other human beings, and interactions within the *information domain*.[130] Understanding will be defined slightly differently. Good understanding is actually a development of how and why things work as they do. This is paramount to being able to have a truly systemic appreciation of the operational environment. In order to gain an understanding, one must realize a relationship between the quality of information, knowledge, and both individual and shared awareness.[131]

There are many benefits to effects based operations and effects based course of action development, including economy of force, reduced collateral damages, and political objectives achieved. The above is not meant is not to over-simplify the EBO process as a cut and dry "silver bullet". The approach should not be dogmatic as a process but as an overall way of considering the environment, more art than science.

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[128] Smith, *Effects-based Operations: Applying Network-Centric Warfare in Peace, Crisis, and War*, 173.

[129] Ibid,173.

[130] David S. Alberts, John J. Garstka, Richard E. Hayes and David T. Signori, *Understanding Information Age Warfare* (Washington: Command and Control Research Program, 2001), 18.

[131] Ibid., 4.

An effects-based approach has been on the decline since its doctrinal debut in 2004 in the "Standing Joint Forces Headquarters, Standing Operating Procedure & Tactics, Techniques, and Procedures". EBO lost some ground and then rebounded within the two documents published by the Joint Warfare Center named "Operational implications of effects based operations" in November 2004 and the *Commander's Handbook for an Effects Based Approach to Joint Operations* February 2006. The last two publications Joint Pubs 5-0 and 3-0 discuss the idea of effects and objective-based approaches but are somewhat void of the actual EBO title. Finally, in October of 2008, General Mattis released a memorandum and article in JFQ magazine, giving what might seem to be the final blow to EBO, "effective immediately, USJFCOM will no longer use, sponsor, or export the terms and concepts related to EBO, ONA, and SOSA in our training, doctrine development, and support of JPME."[132]

General Mattis' article address EBO for the context of Matt Matthews' book, *We Were Caught Unprepared: The 2006 Hezbollah-Israeli War*. Matthews concludes that the root of the Israeli problems was due to a "reliance on poorly understood and controversial Effects-Based Operations (EBO) and Systemic Operational Design (SOD) warfighting theories, and a nearly singular dependence on air power."[133] General Mattis concludes that the failure of the Israeli's was their use of EBO, when in actuality their failure was as Matthews described Israel's poor execution of *their* concept of EBO. Once again this shows the US misunderstanding of the actual concept of EBO and the issue of EBO is far from being resolved.[134]

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[132] James N. Mattis, "USJFCOM Commander's Guidance for Effects-Based Operations", 105.

[133] Matt M. Matthews, "We Were Caught Unprepared: The 2006 Hezbollah-Israeli War," *The Long War Series Occasional Paper 26* (Leavenworth, KS: Combat Studies Institute Press, 2008), iii.

[134] Tomislav Z. Ruby, "Effects-based Operations: More Important Than Ever," *Parameters* (US Army War College Quarterly) XXXVIII, no. 3 (Autumn 2008), 26.

The issue is that EBO goes beyond the current objectives-based approach. The ideas that come from the establishment of causal linkages through which tasks lead to objectives that lead to the effects or an effects-actions-node-resources construct is extremely valuable to the planner. There is a current push that would require planners to attempt to gain a comprehensive understanding of the adversary as system-of systems that in fact would enable an EBO approach to be successful. Currently, planners are very aware of and attempt to identify and manage direct, indirect and cumulative effects, and the harmonic application of selected elements of national power. All of the items above, that the Army planner is attempting to achieve, are the basis for an Effects-based operations and concepts and is the basis for concepts being developed to enhance operational art and design in the 21st century.

Conclusions for the study

There is no formal body of literature that describes the current concept of EBO in full detail. Within Air Force doctrine there are several tenets that can be derived.[135] First, there is a focus on the effects or end-result instead of the weapons system or targets attacked. Secondly, Air Force doctrine no longer places the emphasis on the destruction as a means of achieving an effect. Lastly, Air Force doctrine implements the concept of Parallel Warfare by paralyzing the adversary through multiple simultaneous attacks.[136] Effects-based Operations has many advantages but still has two primary problems that have yet to be solved. First, understanding the links between cause and effect, and secondly, defining the mechanism that ties tactical tasks to strategic effects.

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[135] Department of the Air Force, *Air Force Doctrine Document 2 (AFDD 2), Organization and Employment of Aerospace Power* (Washington, DC: Department of the Air Force, 28 September 1998).

[136] Glenn, "The Challenge of Assessing Effects-based Operations in Air Warfare,".

Recommendations

One of the major concepts within EBO is the linkage between operational objectives to tactical-level action through a specified set of effects. Within the current Army doctrine this is not specifically defined. FM 3-0 states that operational art is "the use of military forces to achieve strategic goals through the design, organization, integration, and conduct of theater strategies, campaigns, major operations, and battles."[137] This concept of EBO is currently being accomplished through operational art.

A second "benefit" of EBO is the desire to achieve systemic situational awareness and understanding of the adversary and operational environment enabled by a system-of-systems analysis. Currently Joint Doctrine, PMESII-PT, and Army Doctrine, METT-TC, provide models for this analysis.[138]

A third "benefit" is the ability to synchronize the "ends, ways and means" by using a harmonized application of the instruments of national power. This would not be considered "new" to the Army but the fundamental purpose of operational art.

EBO also establishes the capability to have command and staff interactions across multiple echelons enabled by significant collaboration capabilities. Within the Army this is essential and accomplished through command and control. The role of strategic and operational commanders is to decide strategic aims, force requirements, force allocation. This includes the decision of which organizations to mobilize and deploy, and the appropriate time and place to do

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[137] Headquarters Department of the Army, *FM 3-0 Operations* (Washington: Department of the Army, February 2008), 2-3.

[138] The operational environment is described and evaluated using the variables of political, military, economic, social, infrastructure, and information with the addition of physical environment and time (PMESII-PT). The factors of mission, enemy, terrain and weather, troops and support available, time available and civil considerations (METT-TC) are used as the categories into which relevant information is grouped for a military operation.

so. At the beginning of a campaign these decision are rarely clear. In order for the commanders to make this decision, effective C2, equipment, facilities, intelligence, and procedures are necessary to give commanders the support they need to visualize the operation, describe their vision to subordinates, and direct actions to implement their decisions.

As in EBO, the U.S. Army uses technology and modern information systems to provide commanders with a common operational picture (COP) that allows them to see and track forces. This COP enabled by modern technology allows command and staff interaction across multiple echelons, and assists commanders in making timely, accurate decisions about operations from tactics to logistics and any additional resources necessary for mission accomplishment.

EBO also provides an enhanced unity of effort between joint, multinational, and interagency organizations. The concept is also not new to the Army. In all actuality, it is fundamental to mission command and collaboration. FM 6-0 defines and describes mission command as "the conduct of military operations through decentralized execution based on mission orders for effective mission accomplishment. Successful mission command results from subordinate leaders at all echelons exercising disciplined initiative within the commander's intent to accomplish missions. It requires an environment of trust and mutual understanding."[139] Mission command is not exclusive to Army Forces. FM 6-0 also describes this concept that EBO espouses. It states that unity of command in interagency and multinational operations may not be possible. [140] However, commanders still organize their C2 (command and control) system to

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[139] Department of the Army, *FM 6-0: Mission Command: Command and Control of Army Forces,* (Washington: August 2003). 1-17.

[140] Unity of command is the Army's preferred method for achieving unity of effort. Commanders always adhere to unity of command when task-organizing Army forces. Under unity of command, any mission falls within the authority and responsibility of a single, responsible commander. Commanders receive orders from only one superior, to whom they are accountable for accomplishing the mission. (FM 6-0)

achieve unity of effort. (See FM 3-0.) When unity of command is not possible, "commanders must achieve unity of effort through cooperation and coordination among all elements of the force—even if they are not part of the same command structure." [141] The linkage between the Army and the multinational / interagency unity of effort is equivalent to the EBO concept as far as each organization is working to achieve the same goal without having unity of command.

A more accurate, rigorous assessment of the attainment of campaign objectives focused on system behavior rather than discrete task accomplishment. Operations are already purpose-based and conditions-focused.

The Army position on EBO as outlined in FMI 5-0.1 states that the US Army will not adopt an effects-based approach to analyzing the operational environment and planning, executing and assessing as described in JP3-0. The authors further state that the methodologies are designed for the operational and strategic levels of war executed by the joint staff.[142] From the Army's perspective, adding the term effects while describing and assessing operations does not fundamentally change Army doctrine. The foundation of full spectrum operations and mission command includes the idea of focusing all efforts toward achieving the operations endstate.[143]

Further arguments have been made that EBO as a concept did not go through the proper vetting and validation and have been disseminated without undergoing formal doctrine

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[141] Department of the Army, *FM 6-0: Mission Command: Command and Control of Army Forces,* (Washington: August 2003), 2-8.

[142] Headquarters Department of the Army, *FMI 5-0.1 Operations Process* (Washington DC: Department of the Army, March 2006), 1-54.

[143] FM 3-0 Chapter 3 states that the foundations for Army operations are contained in its operational concept—full spectrum operations. The goal of full spectrum operations is to apply landpower as part of unified action to defeat the enemy on land and establish the conditions that achieve the joint force commander's end state. The complexity of today's operational environments requires commanders to combine offensive, defensive, and stability or civil support tasks to do this. Mission command, the Army's preferred command and control method, directs the application of full spectrum operations to seize, retain, and exploit the initiative and achieve decisive results.

development. Because of this “end around” there have been several issues. First, it is unclear whether EBO represents a fundamentally different way of conducting operations and, if so, whether the Army should adopt it. Second, there are several different EBO models, resulting in a lack of common understanding of the concept. Thirdly, it is unclear which Army echelons should use EBO.

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